

# **EXHIBIT 1**

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

TQ DELTA, LLC,	)	
	)	
Plaintiff,	)	C.A. No. 13-cv-1835-RGA
	)	
v.	)	
	)	<b>JURY TRIAL DEMANDED</b>
2WIRE, INC.,	)	
	)	
Defendant.	)	
	)	

**THIRD AMENDED COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff, TQ Delta, LLC, for its Third Amended Complaint against Defendant, 2Wire, Inc., alleges as follows:

**THE PARTIES**

1. TQ Delta, LLC (“TQ Delta” or “Plaintiff”) is a limited liability company organized and existing under the laws of the State of Delaware and having a principal place of business at 805 Las Cimas Parkway, Suite 240, Austin, Texas 78746.

2. Upon information and belief, 2Wire, Inc. (“2Wire” or “Defendant”) is a corporation organized and existing under the laws of the State of Delaware and having a principal place of business at 1764 Automation Parkway, San Jose, California 95131.

**JURISDICTION AND VENUE**

3. This action is for patent infringement under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*

4. This Court has subject matter jurisdiction over this dispute pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. This Court has personal jurisdiction over Defendant at least because 2Wire is incorporated in Delaware and Defendant makes, uses, sells, offers for sale, and/or imports infringing products into this jurisdiction and/or otherwise benefits from such acts of infringement in this jurisdiction.

6. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391 and 1400(b) at least because Defendant 2Wire is incorporated in Delaware and because Defendant regularly conducts business in this venue. Defendant does not contest venue in this District.

### **BACKGROUND**

7. TQ Delta is the owner by assignment of a portfolio of patents relating to digital subscriber line (“DSL”) technology, including for example asymmetric digital subscriber line (“ADSL”) technology and very-high-bit-rate digital subscriber line (“VDSL”) technology.

8. DSL technology is used to provide broadband access to data networks, such as the Internet, via copper wires of a local telephone network. More recently, DSL has been used by telephone carriers to deliver video services to subscribers.

9. Inventors of the patents at issue in this case have been substantial contributors of valuable technology to various DSL-related standards on behalf of TQ Delta and, previously, Aware, Inc. (“Aware”), a world-leading innovator and provider of DSL technologies and the prior owner of the patents-in-suit.

10. The International Telecommunication Union (“ITU”) has adopted a number of industry standards relating to various DSL technologies, including ITU-T ADSL2 (G.992.3), ITU-T ADSL2+ (G.992.5), ITU-T VDSL2 (G.993.2), and ITU-T G.bond (e.g., G.998.1, G.998.2) (collectively, “DSL Standards”).

11. Defendant makes, uses, sells, offers for sale, and/or imports customer premise equipment (“CPE”) products, including without limitation gateways, that operate in accordance with one or more of the DSL Standards (“DSL CPE Products”).

12. Defendant provides its DSL CPE Products to telephone/broadband carriers (including, for example, AT&T) and such carriers’ subscribers/customers (collectively, “Customers”) knowing that its DSL CPE Products will be deployed and used in a DSL network to provide DSL service by operating in accordance with the DSL Standards.

13. Defendant also provides instructions and support (including, for example, providing upgrades, troubleshooting, and warranty support) to its Customers to ensure that its DSL CPE Products operate as intended (e.g., in accordance with the DSL Standards).

14. Defendant also makes available, including on its website, data sheets and other information that indicate that its DSL CPE Products operate in accordance with, and/or comply with, one or more of the DSL Standards.

## **DEFENDANT’S KNOWLEDGE OF THE ASSERTED PATENTS**

### **Knowledge of the Asserted Patents Gained From the Complaints**

15. At least as of the time of service of the Complaint in this action on November 4, 2013, Defendant had actual knowledge of the patents asserted in Counts I-XIX of this Complaint. A reasonable opportunity for further investigation or discovery will likely show that at least shortly thereafter, Defendant also knew that the normal, intended use of its DSL CPE Products that operate in accordance with the DSL Standards infringe and/or would induce actual infringement of the patents asserted in Counts I-XIX of this Complaint.

16. At least as of the time of service of the First Amended Complaint in this action on November 20, 2013, Defendant had actual knowledge of the patents asserted in Counts I-XXIV

of this Complaint. A reasonable opportunity for further investigation or discovery will likely show that at least shortly thereafter, Defendant also knew that the normal, intended use of its DSL CPE Products that operate in accordance with the DSL Standards infringe and/or would induce actual infringement of the patents asserted in Counts I-XXIV of this Complaint.

**Knowledge of the Asserted Patents Prior to Filing of the Complaint, Gained from Acts Relating to Plaintiff's Attempts to Negotiate a License to Plaintiff's Patents In Suit**

17. A reasonable opportunity for further investigation or discovery will likely show that on or about July 15, 2013, Defendant gained actual knowledge of the patents asserted in Counts I-XXIV of this Complaint by virtue of actions taken in response to efforts by TQ Delta to license those patents.

18. As referenced below, TQ Delta attempted to negotiate a license under TQ Delta's DSL patent portfolio and advised Defendant that a license under one or more of its DSL patents may be required to practice or otherwise comply with certain DSL-related Recommendations, Deliverables, and/or Standards.

19. On July 15, 2013, TQ Delta sent a first letter to Defendant in care of Mr. Sean McGhie (who is Defendant's General Counsel and/or director), which included an overview of TQ Delta's DSL patent portfolio and an invitation to open licensing discussions. (A true copy of the letter and enclosures are attached as Exhibit A.) The letter was addressed to "Pace Americas," which is a trade name under which Defendant is doing business, and Defendant is the U.S. entity responsible for import and sale of the DSL CPE Products sold, offered for sale, and used in the U.S. in connection with the name Pace. *See* D.I. 23 (Declaration of Ashley Glover) at ¶ 12 ("Trade Name: Pace Americas. Responsible Party: 2Wire, Inc. d/b/a Pace Americas."). On information and belief, Mr. McGhie readily understood that this letter was directed to, and

implicated the business of, Defendant. Defendant received the letter. In its July 15, 2013 letter, TQ Delta requested a response by July 31, 2013.

20. Having received no response to its letter of July 15, 2013, TQ Delta sent a follow-up email to Mr. McGhie on August 6, 2013; this letter requested a response by August 23, 2013. A true copy of the email and attachments are attached as Exhibit B.

21. Having received no response to its email of August 6, 2013 as of August 23, 2013, TQ Delta sent follow-up emails to Defendant in August and September and again invited Defendant to engage in licensing discussions. In an email dated August 23, 2013, TQ Delta further explained that “the use of one or more patent claims in [TQ Delta’s DSL patent] portfolio may be required to practice or otherwise comply with certain DSL-related Recommendations, Deliverables, and/or standards” and that “TQ Delta is willing to negotiate a license with [Defendant] on a non-discriminatory basis on reasonable terms and conditions with respect to any such standard-essential patent claims.” A true copy of this email is attached as Exhibit C.

22. On or about September 4, 2013, Mr. Sean McGhie referred TQ Delta to Mr. David Cordeiro, another in-house attorney for Defendant, relative to TQ Delta’s inquiry.

23. TQ Delta made a good-faith effort to negotiate a license with Defendant under TQ Delta’s DSL patent portfolio, but those efforts were frustrated by Defendant’s delay and refusal to enter into an agreement with reasonable terms that would have allowed the parties to attempt to resolve their dispute outside the context of litigation.

24. Defendant has never applied for a license under TQ Delta’s DSL patent portfolio.

25. In view of the allegations set forth herein, a reasonable opportunity for further investigation or discovery will likely show that, prior to the filing of the complaint herein, Defendant had (1) actual knowledge of the patents asserted in Counts I-XXIV of this Complaint

by investigating the patents owned by TQ Delta/Aware relating to the DSL Standards identified in paragraph 10, and (2) actual knowledge that implementations and practice of the DSL Standards (i.e., Defendant's standard-compliant products and the practice of methods executed during the normal, intended use of Defendant's standard-compliant products by Defendant's Customers) would infringe and/or induce actual infringement of patents owned by TQ Delta, including the patents asserted in Counts I-XXIV of this Complaint.

**Knowledge of the Asserted Patents Prior to Filing of the Complaint  
By Virtue of Reasonable Steps Taken in View of ITU-T Standards and Policies**

26. Since prior to Defendant's infringing conduct alleged herein, the ITU-T ADSL2 (G.992.3), ITU-T ADSL2+ (G.992.5) and ITU-T VDSL2 (G.993.2) standards have been published with an intellectual property rights warning that "strongly urge[s]" implementers to consult the ITU's database regarding applicable intellectual property as follows:

**INTELLECTUAL PROPERTY RIGHTS**

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU [had/had not] received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

*See, e.g., Exhibits D-F (emphasis added).*

27. Since prior to Defendant's infringing conduct alleged herein, the ITU-T G.bond (e.g., G.998.1, G.998.2) standards and prior versions of the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and ITU-T VDSL2 (G.993.2) standards have been published with an intellectual

property rights warning that “strongly urge[s]” implementers to consult the ITU’s database regarding applicable intellectual property as follows:

#### INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU [had/had not] received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

*See Exhibits G-K (emphasis added).*

28. Prior to Defendant’s infringing conduct as alleged herein, the “TSB patent database” identified TQ Delta (or its predecessor-in-interest, Aware) as having submitted a Patent Statement and Licensing Declaration (“PSLD”) with respect to each DSL Standard identified in paragraph 10. *See Exhibits L-P.*

29. All PSLDs submitted by TQ Delta/Aware have been publicly available through the “TSB database” and contain the following language:

The Patent Holder believes that it holds granted and/or pending applications for patents, the use of which would be required to implement the above document and hereby declares, in accordance with the Common Patent Policy for ITU-T/ITU-R/ISO/IEC, that [...] the Patent Holder is prepared to grant a license to an unrestricted number of applicants on a worldwide, non-discriminatory basis and on reasonable terms and conditions to make, use or sell implementations of the above document.

*See, e.g., Exhibit Q (Aware’s PSLD submitted on April 5, 2005 with respect to the VDSL2 (G.993.2) standard).*

30. Prior to Defendant’s infringing conduct alleged herein, Defendant had actual knowledge of, and was familiar with, the intellectual property rights warnings, the ITU



procedures and requirements for submissions of PSLDs, and the process of identifying parties who had submitted PSLDs for the DSL Standards. Defendant had such knowledge at least as early as August 1, 2005, when Defendant submitted a PSLD of its own to the ITU with respect to the VDSL2 (G.993.2) standard. *See* Exhibit R.

31. A reasonable opportunity for further investigation or discovery will likely show that, prior to Defendant’s infringing conduct alleged herein, Defendant had actual knowledge of the patents asserted in Counts I-XXIV of this Complaint at least by virtue of visiting the TSB patent database and investigating the patents and applications owned by TQ Delta/Aware relating to the DSL Standards identified in paragraph 10.

32. A reasonable opportunity for further investigation or discovery will also likely show that, prior to Defendant’s infringing conduct alleged herein, Defendant knew that implementations and practice of the DSL-related standards (i.e., Defendant’s standard-compliant products and practice of methods executed during the normal, intended use of Defendant’s standard-compliant products by Defendant’s Customers) would infringe and/or induce actual infringement of patents owned by TQ Delta/Aware, including the patents asserted in Counts I-XXIV of this Complaint. Such a reasonable opportunity for further investigation or discovery will likely show that (1) Defendant had actual knowledge of the ITU-T intellectual property rights warnings that warn implementers like Defendant that practice of the particular DSL Standards may involve the use of others’ intellectual property rights and “strongly urge[s]” implementers to consult the TSB patent database, (2) Defendant had actual knowledge of TQ Delta/Aware’s PSLDs indexed in the TSB patent database that state that Aware/TQ Delta “holds granted and/or pending applications for patents, the use of which would be required to

implement” the DSL-related standards,” and (3) Defendant was familiar with the implications of the warning and PSLD.

33. A reasonable opportunity for further investigation or discovery will also likely show that, prior to Defendant’s infringing conduct alleged herein, Defendant knew that implementations and practice of the DSL-related standards (i.e., Defendant’s standard-compliant products and practice of methods executed during the normal, intended use of Defendant’s standard-compliant products by Defendant’s Customers) would necessarily infringe and/or induce infringement of patents owned by Aware/TQ Delta, including the patents asserted in Counts I-XXIV of this Complaint, by virtue of Defendant having conducted an investigation of the patents asserted in Counts I-XXIV of this Complaint.

**In the Alternative, Defendant Was Willfully Blind to the Existence of the Asserted Patents and Infringement Thereof**

34. In the alternative and to the extent Defendant did not gain actual knowledge in the manners described above, a reasonable opportunity for further investigation or discovery will likely show that, prior to Defendant’s infringing conduct alleged herein, Defendant was willfully blind to the existence of the patents asserted in Counts I-XXIV of this Complaint, and its infringement of those patents, because:

- (a) Defendant was aware of (1) the ITU’s intellectual property rights warnings that the practice or implementation of the DSL Standards may involve the use of claimed intellectual property rights of others, and (2) the ITU’s statement that parties are “strongly urged to consult the TSB patent database” to obtain notice of intellectual property that is protected by patents, which may be required to implement the standard;

- (b) Defendant was familiar with the ITU requirements and procedures for submission and identification of PSLDs, at least by virtue of Defendant's prior submission of a PSLD;
- (c) By virtue of the allegations set forth herein, Defendant subjectively believed that there was a high probability that TQ Delta/Aware submitted PSLDs to the ITU and that TQ Delta/Aware owned patents that Defendant and its Customers would necessarily infringe by implementing and practicing the DSL Standards identified in paragraph 10;
- (d) Notwithstanding the warnings and strong urging of the ITU and the representations of TQ Delta made in its PSLDs regarding its ownership of standard-essential patents, and other facts obtained from discovery or investigation showing that the practice or implementation of the subject DSL Standards involve the use of claimed intellectual property rights of patents owned by TQ Delta/Aware, Defendant took deliberate actions to purposefully avoid confirming the high probability that TQ Delta owns patents relating to DSL technology, including the patents identified in Counts I-XXIV of this Complaint, and that Defendant's DSL CPE Products infringe and/or induce actual infringement of those patents. These acts include a deliberate decision not to (1) seek a license from TQ Delta/Aware, (2) review the TSB patent database, the U.S. Patent and Trademark Office patent database or other suitable patent database, and/or (3) otherwise conduct an investigation to identify and review TQ Delta/Aware's patents, including those identified in Counts I-XXIV of this Complaint.

35. In the alternative and to the extent Defendant did not gain actual knowledge in the manners described above, a reasonable opportunity for further investigation or discovery will likely show that, since the time Defendant received TQ Delta's letter on July 15, 2013, Defendant was willfully blind to the existence of the patents asserted in Counts I-XXIV of this Complaint, and its infringement of those patents, because:

- (a) Defendant was notified by TQ Delta that "the use of one or more patent claims in [TQ Delta's DSL patent] portfolio may be required to practice or otherwise comply with certain DSL-related Recommendations, Deliverables, and/or standards"; and
- (b) Notwithstanding TQ Delta's letters, further discovery and investigation will likely show that Defendant took deliberate actions to purposefully avoid confirming the high probability that its DSL CPE products that operate in accordance with the DSL Standards identified in paragraph 10 infringe and/or induce actual infringement of TQ Delta's patents, including the patents identified in Counts I-XXIV of this Complaint. These acts include an affirmative decision to (1) delay substantive negotiations with TQ Delta, (2) not review the TSB patent database, the U.S. Patent and Trademark Office patent database or other suitable patent database, and/or (3) not otherwise conduct an investigation to identify and review TQ Delta's patents, including those identified in Counts I-XXIV of this Complaint.

**COUNT I – INFRINGEMENT OF U.S. PATENT NO. 8,090,008**

36. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

37. On January 3, 2012, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,090,008 (“the ‘008 patent”), entitled “System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System.” TQ Delta is the owner and assignee of the ‘008 patent. A copy of the ‘008 patent is attached as Exhibit 1.

38. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘008 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

39. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘008 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the ‘008 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the ‘008 patent by using Defendant’s DSL CPE Products and practicing methods in accordance with the ITU-T VDSL2 (G.993.2) standard. Defendant knows that its Customers infringe the ‘008 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

40. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the '008 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

41. As a result of Defendant's infringement of the '008 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT II – INFRINGEMENT OF U.S. PATENT NO. 8,073,041**

42. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

43. On December 6, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,073,041 ("the '041 patent"), entitled "System and Method for Descrambling the Phase of the Carriers in a Multicarrier Communications System." TQ Delta is the owner and assignee of the '041 patent. A copy of the '041 patent is attached as Exhibit 2.

44. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the '041 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

45. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '041 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the '041 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the '041 patent by using Defendant's DSL CPE Products and practicing methods in accordance with the ITU-T VDSL2 (G.993.2) standard. Defendant knows that its Customers infringe the '041 patent by the normal and intended use of Defendant's DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

46. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the '041 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

47. As a result of Defendant's infringement of the '041 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT III – INFRINGEMENT OF U.S. PATENT NO. 7,292,627**

48. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

49. On November 6, 2007, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,292,627 (“the ‘627 patent”), entitled “System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System.” TQ Delta is the owner and assignee of the ‘627 patent. A copy of the ‘627 patent is attached as Exhibit 3.

50. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘627 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

51. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘627 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the ‘627 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the ‘627 patent by using Defendant’s DSL CPE Products and practicing methods in accordance with the ITU-T VDSL2 (G.993.2) standard. Defendant knows that its Customers infringe the ‘627 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).



52. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the '627 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

53. As a result of Defendant's infringement of the '627 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT IV – INFRINGEMENT OF U.S. PATENT NO. 7,471,721**

54. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

55. On December 30, 2008, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,471,721 ("the '721 patent"), entitled "System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System." TQ Delta is the owner and assignee of the '721 patent. A copy of the '721 patent is attached as Exhibit 4.

56. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing one or more method claims of the '721 patent by using (including for purposes of testing or demonstration), without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

57. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘721 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more method claims of the ‘721 patent by selling, providing support for, and/or providing instructions for use of DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘721 patent by operating Defendant’s DSL CPE Products to practice and use methods in accordance with the ITU-T VDSL2 (G.993.2) standard. Defendant knows that its Customers infringe the ‘721 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

58. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘721 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

59. As a result of Defendant’s infringement of the ‘721 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event

less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT V – INFRINGEMENT OF U.S. PATENT NO. 8,218,610**

60. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

61. On July 10, 2012, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,218,610 (“the ‘610 patent”), entitled “System and Method for Descrambling the Phase of Carriers in a Multicarrier Communications System.” TQ Delta is the owner and assignee of the ‘610 patent. A copy of the ‘610 patent is attached as Exhibit 5.

62. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘610 patent by making and/or using (including for purposes of testing or demonstration), without license or authority, a system, which includes Defendant’s DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

63. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘610 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of the ‘610 patent by selling, providing support for, and/or providing instructions for use of DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the ‘610 patent by making and using a system that includes Defendant’s DSL CPE Products, and using such system to practice and use methods, in accordance with the ITU-T VDSL2 (G.993.2) standard. Defendant knows that its Customers infringe the ‘610 patent by the normal and intended use of Defendant’s DSL CPE Products,

including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

64. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘610 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

65. As a result of Defendant’s infringement of the ‘610 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT VI – INFRINGEMENT OF U.S. PATENT NO. 8,355,427**

66. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

67. On January 15, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,355,427 (“the ‘427 patent”), entitled “System and Method for Descrambling the Phase of Carriers in a Multicarrier Communications System.” TQ Delta is the owner and assignee of the ‘427 patent. A copy of the ‘427 patent is attached as Exhibit 6.

68. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘427 patent by making and/or using (including for purposes of testing or demonstration),

without license or authority, a system, which includes Defendant's DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

69. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '427 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of the '427 patent by selling, providing support for, and/or providing instructions for use of DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the '427 patent by making and using a system that includes Defendant's DSL CPE Products, and using such system to practice and use methods, in accordance with the ITU-T VDSL2 (G.993.2) standard. Defendant knows that its Customers infringe the '427 patent by the normal and intended use of Defendant's DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

70. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the '427 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

71. As a result of Defendant's infringement of the '427 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT VII – INFRINGEMENT OF U.S. PATENT NO. 7,453,881**

72. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

73. On November 18, 2008, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,453,881 ("the '881 patent"), entitled "Systems and Methods for Multit-pair ATM Over DSL." TQ Delta is the owner and assignee of the '881 patent. A copy of the '881 patent is attached as Exhibit 7.

74. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the '881 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2).

75. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '881 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the '881 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the '881 patent by using Defendant's DSL CPE Products and practicing methods in accordance with the ITU-T G.bond standard (e.g.,

G.998.1, G.998.2). Defendant knows that its Customers infringe the ‘881 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2). *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with G.bond (e.g., G.998.1, G.998.2)).

76. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘881 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

77. As a result of Defendant’s infringement of the ‘881 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT VIII – INFRINGEMENT OF U.S. PATENT NO. 7,978,706**

78. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

79. On July 12, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,978,706 (“the ‘706 patent”), entitled “Combining Multiple DSL Transceivers for a High Data Rate Connection.” TQ Delta is the owner and assignee of the ‘706 patent. A copy of the ‘706 patent is attached as Exhibit 8.

80. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing one or more method claims of the ‘706 patent by using (including for purposes of testing or demonstration), without license or authority, DSL CPE Products that operate in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2).

81. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘706 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the ‘706 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘706 patent, by operating Defendant’s DSL CPE Products to practice and use methods in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2). Defendant knows that its Customers infringe the ‘706 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2). *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with G.bond (e.g., G.998.1, G.998.2)).

82. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘706 patent. After the filing of the



Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

83. As a result of Defendant's infringement of the '706 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT IX – INFRINGEMENT OF U.S. PATENT NO. 8,422,511**

84. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

85. On April 16, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,422,511 ("the '511 patent"), entitled "Systems and Methods for Multi-pair ATM Over DSL." TQ Delta is the owner and assignee of the '511 patent. A copy of the '511 patent is attached as Exhibit 9.

86. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing one or more method claims of the '511 patent by using (including for purposes of testing or demonstration), without license or authority, DSL CPE Products that operate in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2).

87. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '511 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the '511 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with

the intent to encourage those Customers to infringe the ‘511 patent, by operating Defendant’s DSL CPE Products to practice and use methods in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2). Defendant knows that its Customers infringe the ‘511 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2). *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with G.bond (e.g., G.998.1, G.998.2)).

88. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T G.bond standard (e.g., G.998.1, G.998.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘511 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

89. As a result of Defendant’s infringement of the ‘511 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT X – INFRINGEMENT OF U.S. PATENT NO. 7,889,784**

90. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

91. On February 15, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,889,784 (“the ‘784 patent”), entitled “Multicarrier Modulation

Messaging for SNR Per Subchannel During Showtime Information.” TQ Delta is the owner and assignee of the ‘784 patent. A copy of the ‘784 patent is attached as Exhibit 10.

92. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘784 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards.

93. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘784 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the ‘784 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘784 patent by using Defendant’s DSL CPE Products and practicing methods in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. Defendant knows that its Customers infringe the ‘784 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with ADSL2 (G.992.3), ADSL2+ (G.992.5), and VDSL2 (G.993.2)).

94. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards,

thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘784 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

95. As a result of Defendant’s infringement of the ‘784 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT XI – INFRINGEMENT OF U.S. PATENT NO. 7,835,430**

96. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

97. On November 16, 2010, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,835,430 (“the ‘430 patent”), entitled “Multicarrier Modulation Messaging for Frequency Domain Received Idle Channel Noise Information.” TQ Delta is the owner and assignee of the ‘430 patent. A copy of the ‘430 patent is attached as Exhibit 11.

98. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘430 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards.

99. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘430 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is

inducing, the direct infringement of one or more claims of the ‘430 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘430 patent, by operating Defendant’s DSL CPE Products to practice and use methods in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. Defendant knows that its Customers infringe the ‘430 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with ADSL2 (G.992.3), ADSL2+ (G.992.5), and VDSL2 (G.993.2)).

100. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘430 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

101. As a result of Defendant’s infringement of the ‘430 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT XII – INFRINGEMENT OF U.S. PATENT NO. 7,570,686**

102. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

103. On August 4, 2009, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,570,686 (“the ‘686 patent”), entitled “Systems and Methods For Establishing a Diagnostic Transmission Mode and Communicating Over the Same.” TQ Delta is the owner and assignee of the ‘686 patent. A copy of the ‘686 patent is attached as Exhibit 12.

104. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘686 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards.

105. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘686 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the ‘686 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘686 patent, by operating Defendant’s DSL CPE Products to practice and use methods in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. Defendant knows that its Customers infringe the ‘686 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. *E.g.,*

<http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with ADSL2 (G.992.3), ADSL2+ (G.992.5), and VDSL2 (G.993.2)).

106. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘686 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

107. As a result of Defendant’s infringement of the ‘686 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

### **COUNT XIII – INFRINGEMENT OF U.S. PATENT NO. 8,238,412**

108. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

109. On August 7, 2012, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,238,412 (“the ‘412 patent”), entitled “Multicarrier Modulation Messaging for Power Level Per Subchannel Information.” TQ Delta is the owner and assignee of the ‘412 patent. A copy of the ‘412 patent is attached as Exhibit 13.

110. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘412 patent by making, using, selling, offering to sell, and/or importing, without license or

authority, DSL CPE Products that operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards.

111. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘412 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the ‘412 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘412 patent, by operating Defendant’s DSL CPE Products to practice and use methods in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. Defendant knows that its Customers infringe the ‘412 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with ADSL2 (G.992.3), ADSL2+ (G.992.5), and VDSL2 (G.993.2)).

112. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘412 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.



113. As a result of Defendant's infringement of the '412 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT XIV – INFRINGEMENT OF U.S. PATENT NO. 8,432,956**

114. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

115. On April 30, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,432,956 ("the '2,956 patent"), entitled "Multicarrier Modulation Messaging for Power Level Per Subchannel Information." TQ Delta is the owner and assignee of the '2,956 patent. A copy of the '2,956 patent is attached as Exhibit 14.

116. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the '2,956 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards.

117. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '2,956 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the '2,956 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the '2,956 patent, by operating Defendant's DSL CPE Products to practice and use methods in accordance with the

ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. Defendant knows that its Customers infringe the ‘2,956 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with ADSL2 (G.992.3), ADSL2+ (G.992.5), and VDSL2 (G.993.2)).

118. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘2,956 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

119. As a result of Defendant’s infringement of the ‘2,956 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT XV – INFRINGEMENT OF U.S. PATENT NO. 7,451,379**

120. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

121. On November 11, 2008, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,451,379 (“the ‘379 patent”), entitled “CRC Counter

Normalization.” TQ Delta is the owner and assignee of the ‘379 patent. A copy of the ‘379 patent is attached as Exhibit 15.

122. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘379 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards.

123. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘379 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the ‘379 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘379 patent, by operating Defendant’s DSL CPE Products to practice and use methods in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. Defendant knows that its Customers infringe the ‘379 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with ADSL2 (G.992.3), ADSL2+ (G.992.5), and VDSL2 (G.993.2)).

124. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards,

thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘379 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

125. As a result of Defendant’s infringement of the ‘379 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT XVI – INFRINGEMENT OF U.S. PATENT NO. 8,516,337**

126. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

127. On August 20, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,516,337 (“the ‘337 patent”), entitled “CRC Counter Normalization.” TQ Delta is the owner and assignee of the ‘337 patent. A copy of the ‘337 patent is attached as Exhibit 16.

128. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘337 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards.

129. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘337 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is

inducing, the direct infringement of one or more claims of the ‘337 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘337 patent, by operating Defendant’s DSL CPE Products to practice and use methods in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. Defendant knows that its Customers infringe the ‘337 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with ADSL2 (G.992.3), ADSL2+ (G.992.5), and VDSL2 (G.993.2)).

130. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘337 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

131. As a result of Defendant’s infringement of the ‘337 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT XVII – INFRINGEMENT OF U.S. PATENT NO. 7,979,778**

132. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

133. On July 12, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,979,778 (“the ‘778 patent”), entitled “CRC Counter Normalization.” TQ Delta is the owner and assignee of the ‘778 patent. A copy of the ‘778 patent is attached as Exhibit 17.

134. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing one or more method claims of the ‘778 patent by using (including for purposes of testing or demonstration), without license or authority, DSL CPE Products that operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards.

135. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘778 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the ‘778 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘778 patent, by operating Defendant’s DSL CPE Products to practice and use methods in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. Defendant knows that its Customers infringe the ‘778 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. *E.g.,*

<http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with ADSL2 (G.992.3), ADSL2+ (G.992.5), and VDSL2 (G.993.2)).

136. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘778 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

137. As a result of Defendant’s infringement of the ‘778 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT XVIII – INFRINGEMENT OF U.S. PATENT NO. 7,925,958**

138. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

139. On April 12, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,925,958 (“the ‘958 patent”), entitled “CRC Counter Normalization.” TQ Delta is the owner and assignee of the ‘958 patent. A copy of the ‘958 patent is attached as Exhibit 18.

140. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘958 patent by making and/or using (including for purposes of testing or demonstration), without license or authority, a system, which includes Defendant’s DSL CPE Products that

operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards.

141. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘958 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of the ‘958 patent by selling, providing support for, and/or providing instructions for use of DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the ‘958 patent by making and using a system that includes Defendant’s DSL CPE Products, and using such system to practice and use methods, in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. Defendant knows that its Customers infringe the ‘958 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with ADSL2 (G.992.3), ADSL2+ (G.992.5), and VDSL2 (G.993.2)).

142. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T ADSL2 (G.992.3), ADSL2+ (G.992.5), and/or VDSL2 (G.993.2) standards, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘958 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.



143. As a result of Defendant's infringement of the '958 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT XIX – INFRINGEMENT OF U.S. PATENT NO. 8,462,835**

144. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

145. On June 11, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,462,835 ("the '835 patent"), entitled "Impulse Noise Management." TQ Delta is the owner and assignee of the '835 patent. A copy of the '835 patent is attached as Exhibit 19.

146. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the '835 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

147. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '835 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the '835 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the '835 patent by using Defendant's DSL CPE Products and practicing methods in accordance with the ITU-T VDSL2 (G.993.2)

standard. Defendant knows that its Customers infringe the '835 patent by the normal and intended use of Defendant's DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

148. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the '835 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

149. As a result of Defendant's infringement of the '835 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT XX – INFRINGEMENT OF U.S. PATENT NO. 7,836,381**

150. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

151. On November 16, 2010, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,836,381 ("the '381 patent"), entitled "Computer Readable Medium with Instructions for Resource Sharing in a Telecommunications Environment." TQ Delta is the owner and assignee of the '381 patent. A copy of the '381 patent is attached as Exhibit 20.

152. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the ‘381 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

153. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the ‘381 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the ‘381 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the ‘381 patent by using Defendant’s DSL CPE Products and practicing methods in accordance with the ITU-T VDSL2 (G.993.2) standard. Defendant knows that its Customers infringe the ‘381 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

154. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘381 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

155. As a result of Defendant's infringement of the '381 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT XXI – INFRINGEMENT OF U.S. PATENT NO. 7,844,882**

156. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

157. On November 30, 2010, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,844,882 ("the '882 patent"), entitled "Resource Sharing in a Telecommunications Environment." TQ Delta is the owner and assignee of the '882 patent. A copy of the '882 patent is attached as Exhibit 21.

158. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the '882 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

159. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '882 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the '882 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the '882 patent by using Defendant's DSL CPE Products and practicing methods in accordance with the ITU-T VDSL2 (G.993.2)

standard. Defendant knows that its Customers infringe the ‘882 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

160. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘882 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

161. As a result of Defendant’s infringement of the ‘882 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT XXII – INFRINGEMENT OF U.S. PATENT NO. 8,276,048**

162. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

163. On September 25, 2012, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,276,048 (“the ‘048 patent”), entitled “Resource Sharing in a Telecommunications Environment.” TQ Delta is the owner and assignee of the ‘048 patent. A copy of the ‘048 patent is attached as Exhibit 22.

164. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the '048 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

165. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '048 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the '048 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the '048 patent by using Defendant's DSL CPE Products and practicing methods in accordance with the ITU-T VDSL2 (G.993.2) standard. Defendant knows that its Customers infringe the '048 patent by the normal and intended use of Defendant's DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

166. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the '048 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

167. As a result of Defendant's infringement of the '048 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

**COUNT XXIII – INFRINGEMENT OF U.S. PATENT NO. 8,495,473**

168. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

169. On July 23, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,495,473 ("the '473 patent"), entitled "Resource Sharing in a Telecommunications Environment." TQ Delta is the owner and assignee of the '473 patent. A copy of the '473 patent is attached as Exhibit 23.

170. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing the '473 patent by making, using, selling, offering to sell, and/or importing, without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

171. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '473 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the '473 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to directly infringe the '473 patent by using Defendant's DSL CPE Products and practicing methods in accordance with the ITU-T VDSL2 (G.993.2)

standard. Defendant knows that its Customers infringe the ‘473 patent by the normal and intended use of Defendant’s DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

172. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the ‘473 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

173. As a result of Defendant’s infringement of the ‘473 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

#### **COUNT XXIV – INFRINGEMENT OF U.S. PATENT NO. 7,831,890**

174. TQ Delta hereby incorporates by reference Paragraphs 1 through 35 of this Third Amended Complaint.

175. On November 9, 2010, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,831,890 (“the ‘890 patent”), entitled “Resource Sharing in a Telecommunications Environment.” TQ Delta is the owner and assignee of the ‘890 patent. A copy of the ‘890 patent is attached as Exhibit 24.



176. Defendant, in violation of 35 U.S.C. § 271(a), has been and is directly infringing one or more method claims of the '890 patent by using (including for purposes of testing or demonstration), without license or authority, DSL CPE Products that operate in accordance with the ITU-T VDSL2 (G.993.2) standard.

177. Upon information and belief, a reasonable opportunity for further investigation or discovery will likely show that, with knowledge or willful blindness of the existence of the '890 patent (at least as of the service of the original Complaint and/or earlier as set forth in paragraphs 7-35 above), Defendant, in violation of 35 U.S.C. § 271(b), has knowingly induced, and is inducing, the direct infringement of one or more claims of the '890 patent by selling, providing support for, and/or providing instructions for use of its DSL CPE Products to Customers, with the intent to encourage those Customers to infringe the '890 patent, by operating Defendant's DSL CPE Products to practice and use methods in accordance with the ITU-T VDSL2 (G.993.2) standard. Defendant knows that its Customers infringe the '890 patent by the normal and intended use of Defendant's DSL CPE Products, including by use in accordance with the ITU-T VDSL2 (G.993.2) standard. *E.g.*, <http://www.pace.com/Documents/Products/Am/RG/5168n.pdf> (example data sheet specifying that product is compliant with VDSL2 (G.993.2)).

178. Prior to and after the filing of the Complaint herein, Defendant provided product literature and information specifying that certain of its DSL CPE Products operate in accordance with the ITU-T VDSL2 (G.993.2) standard, thereby indicating that Defendant specifically intended for its Customers to use the products in a way that would necessarily infringe standard-essential patent claims of the '890 patent. After the filing of the Complaint, Defendant continued to provide support for and instructions on how to use its DSL CPE Products in accordance with the aforementioned standard.

179. As a result of Defendant's infringement of the '890 Patent, TQ Delta has suffered damages and is entitled to monetary relief to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the Court.

### **PRAYER FOR RELIEF**

WHEREFORE, TQ Delta, respectfully requests that the following relief:

A. That the Court enter judgment in favor of TQ Delta that Defendant have infringed TQ Delta's '008 patent, '041 patent, '627 patent, '721 patent, '610 patent, '427 patent, '881 patent, '706 patent, '511 patent, '784 patent, '430 patent, '686 patent, '412 patent, '2,956 patent, '379 patent, '337 patent, '778 patent, '958 patent, '835 patent; '381 patent, '882 patent, '048 patent, '473 patent, and '890 patent;

B. That the Court enter an order declaring that Plaintiff has complied with any RAND obligations and further enter a permanent injunction under 35 U.S.C. § 283 enjoining Defendant and its officers, directors, agents, servants, affiliates, employees, divisions, branches, subsidiaries, parents, and all others acting in active concert or participation with it, from infringement of TQ Delta's '008 patent, '041 patent, '627 patent, '721 patent, '610 patent, '427 patent, '881 patent, '706 patent, '511 patent, '784 patent, '430 patent, '686 patent, '412 patent, '2,956 patent, '379 patent, '337 patent, '778 patent, '958 patent, '835 patent, '381 patent, '882 patent, '048 patent, '473 patent, and '890 patent;

C. That the Court enter a judgment and order under 35 U.S.C. § 284 requiring Defendant to pay TQ Delta its damages, costs, expenses, and pre-judgment and post-judgment interest for Defendant's infringement of TQ Delta's '008 patent, '041 patent, '627 patent, '721 patent, '610 patent, '427 patent, '881 patent, '706 patent, '511 patent, '784 patent, '430 patent, '686 patent, '412 patent, '2,956 patent, '379 patent, '337 patent, '778 patent, '958 patent, '835 patent, '381 patent, '882 patent, '048 patent, '473 patent, and '890 patent;

D. That the Court find this case exceptional under 35 U.S.C. § 285, and award TQ Delta its costs and fees in this action, including reasonable attorneys' fees and pre-judgment interest thereon; and

E. That the Court grant TQ Delta such other and further relief as it deems just and proper.

### **DEMAND FOR JURY TRIAL**

TQ Delta, pursuant to Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable.

DATED: October 13, 2017

Respectfully submitted,

FARNAN LLP

/s/ Brian E. Farnan

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